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Original Communication

Suicidal hanging in Manipal, South India – Victim profile and gender differences

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Abstract

Suicide is an important health hazard worldwide. Hanging is one of the preferred means of committing suicide in India. The current research is aimed to describe the victimologic profile and find the gender differences in suicidal hanging in Manipal, South India. A 10-year retrospective review of medicolegal autopsy records was conducted at the Department of Forensic Medicine and Toxicology, Kasturba Medical College, Manipal. A total of 70 cases of suicidal hanging autopsied during the study period spanning from January 1997 to December 2006 were identified. Data on suicidal hanging was obtained, analysed and compared for males and females using Microsoft Excel and Statistical Package for Social Sciences (SPSS) for Windows, version 10.0. Males were predominantly affected (male:female – 2:1). Maximum victims of suicidal hanging were Hindus in their 3rd decade of life. Mean age for males and females was 40.62 years and 29.96 years respectively. Maximum mortalities were noted during summer months. Identification of target population is the prime issue before the process of prevention and health promotion is initiated. A difference in pattern of suicidal hanging exists among males and females. Thus, psychosocial correlates should be addressed separately for males and females in epidemiological studies for identification of population at risk and strategies for prevention.

Keywords: Suicide; Hanging; Mortality; Victimology; South India

1. Introduction

Suicide is one of the most important public health problems worldwide. Pattern of suicidal deaths reveals the existing social and psychological state of mind of the people of a region.[1] Suicidal behaviour, pattern and rates differ in various populations and culture. India ranks 10th in the world with a suicide rate of 9.74 per lakh population.[2] The problem may be even more serious as studies based on verbal autopsies from Vellore further raises the issue of underreporting of suicides in India.[3,4] The choice of method used to commit suicide depends on availability of means, knowledge about lethal effectiveness, and victim's motivation. Preference of method of suicide in men and women is complexly determined. Hanging and poisoning were the two preferred methods of committing suicide among males and females in this region of India.[5] Suicidal hanging is self-suspension of the body by a ligature around the neck with the weight of the body acting as the force of compression around the neck. The ligature material commonly used is either the easily available clothing or a rope. In most cases, a ligature mark is present on the neck. There are a number of mechanisms by which hanging may cause death, that act either independently or in concert. These include stretching of the carotid complex causing reflex cardiac arrest; venous and arterial occlusion; airway obstruction; disruption of the spinal cord, etc.

Since suicide is a multi-causal phenomenon, its therapy and prevention are complex and gender differences should be taken into consideration, while building up helping

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strategies. Manipal is a rural township situated in the South Canara district of coastal Karnataka, South India, and Kasturba Hospital is the apex teaching hospital of Kasturba Medical College, Manipal. Gender differences were evident in suicidal poisoning fatalities in this region.[1] This retrospective research is done with an aim to develop the victimologic profile of suicidal hanging in this region of India, and to describe the gender differences among males and females that may prove important in identification of people at risk and in development of preventive strategies.

2. Methods

Autopsy or postmortem examination is imperative when death is sudden, unexpected, suspicious or unnatural. In India, all hanging deaths are recorded as unnatural and medicolegal autopsy is performed. This 10-year retrospective descriptive research was carried out in the Department of Forensic Medicine and Toxicology, Kasturba Medical College, Manipal. All deaths due to hanging autopsied at the aforementioned centre between January 1997 and December 2006, where manner of death was deemed to be suicidal as per police investigations and autopsy findings were included in the present study. A detailed victimologic profile was made based on autopsy records and information furnished by the police in inquest papers. Available data was analysed and compared for males and females using Microsoft Excel and Statistical Package for Social Sciences (SPSS) for Windows, version 11.0.

3. Results

A total of 1543 autopsies were conducted at the aforementioned centre during the study period. Deaths due to suicidal hanging constituted 4.5% ($n = 70$) of the total autopsied cases during the study period. Hangings have increased from 1.7% to 5.8% of the unnatural deaths over the study period. Year wise distribution of hanging mortalities is shown in Table 1. Majority of the victims were males ($n = 47$, 67.1%). Male-female ratio was 2:1. The age of the victims ranged from 11 to 85 years, with peak incidence in the 3rd decade of life, after which a gradual decline was evident up to the 7th decade. Decades of 3rd–5th were the most affected age groups, together accounting for 68.5% ($n = 48$) of the total hanging deaths (Table 2). Mean age (±S.D) of the victims was 37.10 (±17.26) years. 84.3% of the victims ($n = 59$) were Hindus, followed by 10% Christians ($n = 7$) and 1.4% Muslims ($n = 1$). In three cases religion of the deceased remained unknown. 58.6% of the hanging deaths ($n = 41$) occurred during first half of the year (January–June). Least mortalities ($n = 13$, 18.6%) were reported during the rainy season (June–September), while maximum hanging fatalities ($n = 33$, 47.1%) were noticed during summers (February–May) followed by winters (October–January). Month wise distribution of hanging fatalities is shown in Fig. 1.

On comparative gender analysis, the age of the male victims ranged from 12 to 85 years, while their female counterparts were aged between 11 and 80 years. Mean age in males was 40.6 ± 17.3 and in females 29.9 ± 15.2 years. Females were particularly vulnerable during 2nd and 3rd decades and males in 3rd–5th decades. Male–female ratio increased with advancement of age (Table 2). Maximum suicidal hanging among males ($n = 25$, 53.2%) were reported in summers followed by winters ($n = 16$, 34%). Among females, however, minimal seasonal variations were evident (Fig. 2).

4. Discussion

Individuals of different races in different countries tend to use different methods of committing suicide.[6] Cultural, religious and social values appear to play a vital role.[7] Factors that place individuals at increased risk for suicide are complex and many interact with one another. These include psychiatric, biological, social and environmental factors as well as factors related to an individual's life history. Such factors include psychiatric illnesses, alcohol abuse, interpersonal conflicts or broken or disturbed relationships, legal- or work-related problems and economic hardships.[8] A lower incidence of depression, a well recognized risk factor for suicide worldwide has been reported in suicidal poisoning mortalities in the region.[1] The reason for the lower incidence of depression in India is attributed to the reluctance of the people to attend a psychiatric clinic as well as shortage of trained psychiatrists.[1,9] Suicide in males is more common in most countries with the

Table 1
Year wise distribution of suicidal hanging victims

Year	Total autopsies	Suicidal hanging (*n*)	Percentage (%)	M:F
1997	174	03	1.72	1:2
1998	154	05	3.25	4:1
1999	161	08	4.97	1.7:1
2000	163	05	3.07	1.5:1
2001	199	06	3.02	1:1
2002	158	10	6.33	2.3:1
2003	113	07	6.19	1:1.3
2004	129	06	4.65	5:1
2005	137	11	8.03	2.7:1
2006	155	09	5.81	8:1
Total	1543	70	4.54	2:1

Table 2
Year-wise distribution of suicidal hanging victims

Age (years)	Male (*n*, %)	Female (*n*, %)	Total (*n*, %)	M:F
<19	02, 04.3	05, 21.7	07, 10.0	0.4:1
20–29	14, 29.8	10, 43.5	24, 34.3	1.4:1
30–39	08, 17.0	04, 17.4	12, 17.1	2:1
40–49	10, 21.3	02, 08.7	12, 17.1	5:1
50–59	06, 12.8	01, 04.3	07, 10.0	6:1
>60	07, 14.8	01, 04.3	08, 11.5	7:1
Total	47, 100	23, 100	70, 100	2:1

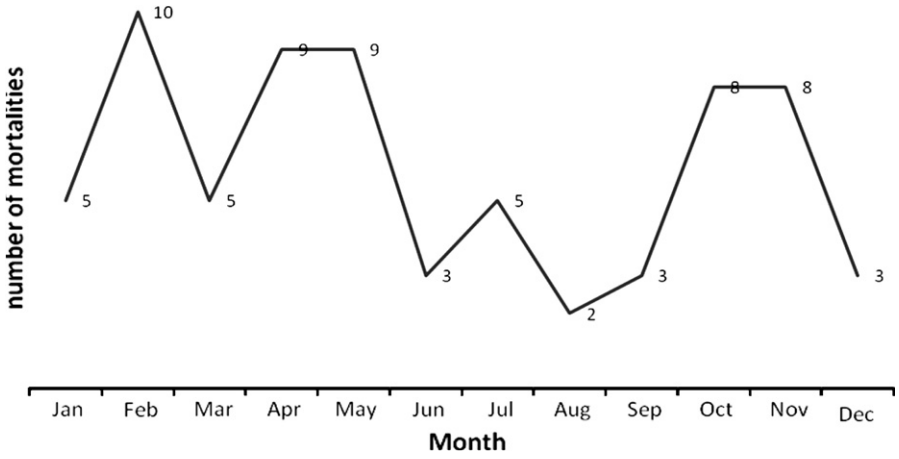

Fig. 1. Month wise distribution of cases.

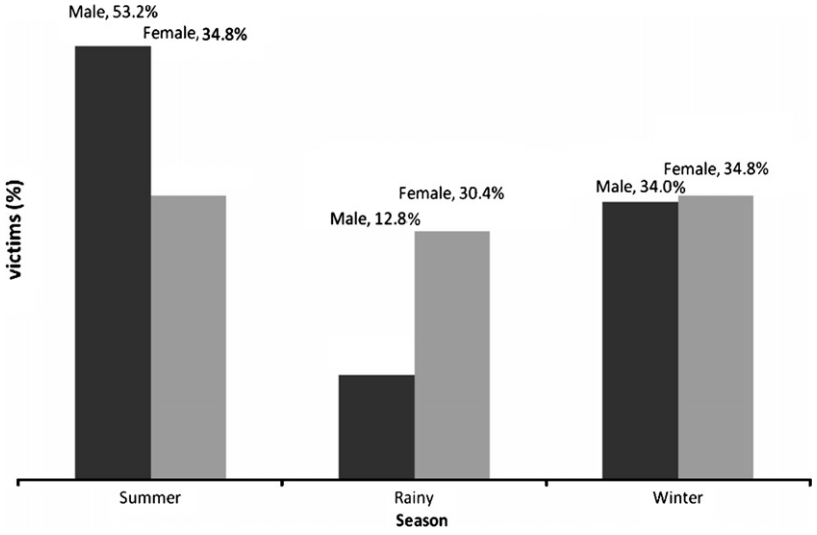

Fig. 2. Seasonal variation: gender differences.

exception of China.[10] Higher suicide rate in men is attributed to the fact that males are subjected more rigorously to the temptations, challenges, stresses, and strains in life than females.[11,12] Hanging is one of the preferred means of suicide in India. Males outnumbered females in our study, and that can be attributed to the fact that males are more exposed to hazards of outside world viz. increased stress, strain and financial burden. Male predominance in our study is similar to findings of other researchers.[13–15] Although suicidal hanging has been reported in all age groups after the first decade, maximum numbers of victims were in their 3rd and 4th decades of life for this being the most active phase of life socially, physically and emotionally. The peak incidence during 3rd and 4th decades is often attributed to the tremendous stress a person is put to during this period of life, and is similar to other studies worldwide.[16,17] Suicidal hanging was relatively more common in young females, where 2nd and 3rd decades together accounting for nearly two-third of the female mortalities. A female is likely to face added stress during and following marriage that may be responsible for higher number of suicides in this age group. In males, higher number of suicidal hanging during the 3rd–5th decades is mainly attributed to the growing financial burden the male is put to during this period of life. With advancement of age, male preference for hanging as a means of suicide increases. Amongst the elderly age group, suicidal hanging was restricted mostly to males. Higher incidence in males aged more than 70 years can be owed to increased financial dependability in addition to physical diseases, that they are prone to as the age increases, resulting in depression. A prospective study from a rural block of southern India elicited acute and/or chronic stress for nearly all subjects of suicide. A gender and age difference in stress was observed. More men suffered from chronic stress while more women had acute precipitating events. Younger subjects had more acute precipitating events before death while older subjects reported more chronic stress.[18] Incidence of suicidal

hanging was very high in Hindu males (76.6%) while all females who resorted to hanging were Hindus. Suicide being considered '*haram*' is strictly forbidden in Islam. This may be the reason for lower number of suicides among Muslims as such.[19]

Seasonal asymmetry in suicide is a long observed phenomenon and possible association between the monthly and seasonal distribution of completed and attempted suicides have long been studied. A South African study reported maximum hangings in November and minimum during September.[14] Preti and Miotto found evidence for seasonality only in violent suicides whereas non-violent suicides showed no seasonal trends.[20] Maximum suicides by hanging, a violent method of suicide, were reported during summer months of the year in our study. It has been shown that the latitude and climatic factors, such as day length, daily temperature, daylight, and humidity may influence mood.[21,22] It has been suggested that seasonal vulnerability is biologically determined and associated with the circannual rhythms of central serotonin neurotransmission.[23] No seasonal variations were, however, evident for female mortalities due to suicidal hanging in our study, cause of which remains unclear.

5. Conclusion

Victim profile of suicidal hanging differs for males and females with regard to different variables analysed. The study reveals that:

- Suicidal hanging amounted for 4.5% of the total autopsied cases. Hindu males and females were more common victims. Males were twice more commonly affected than females.
- Overall, males and females in their 3rd decade were most prone to suicidal hanging. With advancement of age, male preference for hanging as a means of suicide increased. Adolescent females and elderly males formed the more vulnerable groups.
- Seasonal asymmetry is observed only in males with maximum mortalities occurring during summer months.

Stress management and psychological counseling are recommended to decrease the stress of present-day perfunctory fashioned stereotypes to ward off these suicidal hanging mortalities. The study confirms that psychosocial correlates should be addressed separately for males and females in epidemiological studies for identification of population at risk and strategies for prevention. Although the study may help in defining the target population for suicidal hanging separately among males and females, there is a need for prospective studies and further research to understand the gender differences in the underlying risk factors of suicidal hanging in different age groups.

Conflict of Interest Statement

None to declare.

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